Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently Amended) A method for producing a multimedia summary of summarizing at least one multimedia stream the summary comprising key elements selected from said at least one multimedia stream (101, 102), the method comprising:

a.) one of receiving and retrieving said at least one multimedia stream (101, 102) comprising video, audio and text information;

b.) dividing the at least one multimedia stream (101, 102) into a video substream (303), an audio sub-stream (305) and a text sub-stream (307);

c.) identifying for potential inclusion in the summary video, audio and text key elements from said video (303), audio (305) and text (307) sub-streams, respectively;

d.) computing an importance value for the identified video, audio and text key elements identified at said step (c);

e.) first filtering the identified video, audio and text key elements to exclude those key elements whose associated importance value is less than a pre-defined video, audio and text importance threshold, respectively; and

f.) second filtering the remaining key elements from said step (e) in accordance with a user profile;

g.) third filtering the remaining key elements from said step (f) in accordance with network and user device constraints; and

h.) outputting a multimedia summary ~~(120)~~ which comprises ~~from the~~ key elements remaining from said step (g).

2.   (Currently Amended)   The method of Claim 1, wherein said at least one multimedia stream ~~(101, 102)~~ is one of an analog and digital multimedia stream.

3.   (Currently Amended)   The method of Claim 1, wherein the step of dividing the at least one multimedia stream ~~(101, 102)~~ into a video sub-stream ~~(303)~~ further comprises the step of identifying and grouping said at least one multimedia stream ~~(101, 102)~~ into a plurality of news stories ~~(330)~~ where each identified news story ~~(330)~~ is comprised of an anchor portion ~~(311, 312)~~ and a reportage ~~(321,322)~~ portion.

4.   (Currently Amended)   The method of Claim 1, wherein the step of dividing the at least one multimedia stream ~~(101, 102)~~ into an audio sub-stream ~~(305)~~ further comprises dividing said at least one multimedia stream ~~(101, 102)~~ into a plurality of equal-sized frames ~~(306)~~ of a fixed time duration.

5.   (Currently Amended)   The method of Claim 1, wherein the step of dividing the at least one multimedia stream ~~(101, 102)~~ into a text sub-stream ~~(307)~~ further comprises dividing said at least one multimedia stream ~~(101, 102)~~ into a plurality of frames ~~(308)~~ wherein each frame of said plurality of frames is defined on a word boundary.

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6. (Currently Amended) The method of Claim 1, wherein the act of identifying video, audio and text key elements from said video (303), audio (305) and text (307) sub-streams further comprise the acts of:

1.) identifying low (510), mid (710) and high level (910) features from the plurality of frames which comprise said video (303), audio (305) and text (307). substreams;

2.) determining an importance value to each of said extracted low (510), mid (710) and high level (910) features from said identifying act;

3.) computing a frame importance value for each of said plurality of frames which comprise said video (303), audio (305) and text (307) sub-streams as a function of the importance values of the feature importance values determined at said determining act;

4.) combining the frames into segments in each of said video (303), audio (305) and text (307) sub-streams;

5.) computing an importance value per segment for each segment from said combining act;

6.) ranking the segments based on said computed importance value at said computing step; and

7.) identifying key elements based on said ranked segments.

7. (Currently Amended) The method of Claim 6, wherein said act of computing a frame importance value for each of said extracted low (510), mid (710) and high level (910) features further comprises computing said importance value by one of deterministic, statistical and conditional probability means.

8.   (Currently Amended)   The method of Claim 7, wherein said ~~probabilistic~~ conditional probability means comprises computing said frame importance value as one of a Gaussian, Poisson, Rayleigh and Bernoulli distribution.

9.   (Currently Amended)   The method of Claim 8, <u>further comprising computing the</u> ~~wherein said~~ Gaussian distribution <u>according to the equation</u> ~~for computing said frame importance value is computed~~ as:

$$P(s|\theta) = \sqrt{\frac{\theta_2}{2\pi}}\, e^{-(1/2)\theta_2(x-\theta_1)}$$

where: θ is any of the features;

θ_1 is the average of the feature value; and

θ_2 is the expected deviation.

10.   (Currently Amended)   The method of Claim 7, wherein said deterministic means comprises computing said frame importance value <u>according to the equation</u> as:

$$\text{Frame Importance} = \sum w_i f_i$$

where: f_i represent low, mid-level and high-level features; and

w_i represent weighting factors for weighting said features.

11.   (Original)   The method of Claim 6, wherein said step (4) of combining the frames into video segments further comprises combining said frames by one of family histogram computation means and shot change detection means.

12.   (Currently Amended)   The method of Claim 6, wherein said step (4) of combining the frames into audio segments further comprises the steps of:

categorizing each frame from said audio sub-stream (305) as one of a speech frame, a music frame, a silence frame, a noise frame, a speech + speech frame, a speech + noise frame and a speech + music frame; and

grouping consecutive frames having the same categorization.

13.   (Currently Amended)   The method of Claim 6, wherein act step (4) of combining the frames into text segments further comprises combining said frames based on punctuation included in said text sub-stream (307).

14.   (Original)   The method of Claim 6, wherein said step (5) of computing an importance value per segment further comprises averaging the frame importance values for those frames which comprise said segment.

15.   (Original)   The method of Claim 6, wherein said step (5) of computing an importance value per segment further comprises using the highest frame importance value in said segment.

16.   (Original)   The method of Claim 6, wherein said step (7) of identifying key elements based on said rankings further comprises identifying key elements whose segment ranking exceeds a predetermined segment ranking threshold.

17.   (Original)   The method of Claim 6, wherein said step (7) of identifying key elements based on said rankings further comprises identifying key elements whose segment ranking both exceeds a predetermined segment ranking threshold and constitute a local maxima.

18.   (Original)   The method of Claim 6, wherein said step (7) of identifying key elements based on said rankings further comprises identifying key elements whose segment ranking constitutes a local maxima.

19.   (Currently Amended)   A system ~~(100)~~ for producing a multimedia summary of summarizing at least one multimedia stream ~~(101, 102)~~, the summary comprising key elements selected from said at last one multimedia stream, the system comprising: a modality recognition and division (MRAD) module ~~(103)~~ comprising a story segment identifier (SSI) module ~~(103a)~~, an audio identifier (AI) module ~~(103b)~~ and a text identifier (TI) module ~~(103c)~~, the MRAD module ~~(103)~~ communicatively coupled to a first external source ~~(110)~~ for receiving said at least one multimedia stream ~~(101, 102)~~, the MRAD module ~~(103)~~ communicatively coupled to a second external source ~~(112)~~ for receiving said at least one multimedia stream ~~(101, 102)~~, the MRAD module ~~(103)~~ dividing said at least one multimedia stream ~~(101, 102)~~ into a video ~~(303)~~ , an audio ~~(305)~~ and a text ~~(307)~~ sub-stream and outputting said video ~~(303)~~, audio ~~(305)~~ and text ~~(307)~~ sub-streams to a key element identifier (KEI) module ~~(105)~~, the KEI module ~~(105)~~ comprising a feature extraction (FE) module ~~(107)~~ and an importance value (IV) module ~~(109)~~ for identifying key elements from within said video ~~(303)~~, audio ~~(305)~~ and text ~~(307)~~ sub-streams and assigning importance values thereto, the KEI module ~~(105)~~ communicatively coupled to a key element filter (KEF) ~~(111)~~ for receiving the identified key elements

and filtering said key elements that exceed a pre-determined threshold criteria, the KEF module (111) communicatively coupled to a user profile filter (UPF) (113) for receiving filtered key elements and further filtering said filtered key elements in accordance with a user profile, the UPF module (113) communicatively coupled to a network and device constraint (NADC) module (115), said NADC module (115) receiving said further filtered key elements and further filtering said further filtered key elements in accordance with network and/or user device constraints, the NADC module (115) outputting a multimedia summary (120) of said at least one multimedia stream <u>which comprises key elements remaining after said further filtering in the NADC module</u> (101, 102).

20.   (Currently Amended)   The system of Claim 19, further comprising a user preference database (117) communicatively coupled to said UPF module (113) for storing user profiles.

21.   (Currently Amended)   The system of Claim 19, wherein the first external source (110) is a broadcast channel selector.

22.   (Currently Amended)   The system of Claim 19, wherein the first external source (110) is a video streaming source.

23.   (Currently Amended)   The system of Claim 19, wherein said at least one multimedia stream (101, 102) is one of an analog and digital multimedia stream.

24. (Currently Amended) The system of Claim 19, wherein the NADC module (115) is communicatively connected to an external network (122) coupled to a user device (124).

25. (Currently Amended) The system of Claim 19, wherein the network (122) is the Internet.

26. (Currently Amended) An article of manufacture for producing a multimedia summary of summarizing at least one multimedia stream (101, 102), the summary comprising key elements selected from said at least one multimedia stream, the article comprising: a computer readable medium having computer readable code means embodied thereon, said computer readable program code means comprising:

an act of one of receiving and retrieving said at least one multimedia stream (101, 102) comprising video, audio and text information;

an act of dividing said at least one multimedia stream (101, 102) into a video sub-stream (303), an audio sub-stream (305) and a text sub-stream (307);

an act of identifying for potential inclusion in the summary video, audio and text key elements from said video (303), audio (305) and text (307) sub-streams, respectively;

an act of computing an importance value for the identified video, audio and text key elements identified at said identification act;

an act of first filtering the identified video, audio and text key elements to exclude those key elements whose associated importance value is less than a pre-defined video, audio and text importance threshold, respectively; and

an act of second filtering the remaining key elements from said first

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filtering act in accordance with a user profile;

  an act of third filtering the remaining key elements from said second filtering act in accordance with network and user device constraints; and

  an act of outputting a multimedia summary <u>which comprises (120)</u> ~~from the~~ key elements remaining from said third filtering act.

  27. (Currently Amended) The article of manufacture of Claim 26 further wherein the act of identifying video, audio and text key elements from said video ~~(303)~~, audio ~~(305)~~ and text ~~(307)~~ sub-30 streams, respectively, further comprises:

  an act of identifying low ~~(510)~~, mid ~~(710)~~ and high level ~~(910)~~ features from the plurality of frames which comprise said video ~~(303)~~, audio ~~(305)~~ and text ~~(307)~~ sub-streams;

  an act of determining an importance value to each of said extracted low ~~(510)~~, mid ~~(710)~~ and high level ~~(910)~~ features from said identifying act;

  an act of computing a frame importance value for each of said plurality of frames which comprise said video ~~(303)~~, audio ~~(305)~~ and text ~~(307)~~ sub-streams as a function of the importance values of the feature importance values determined at said determining step;

  an act of combining the frames into segments in each of said video ~~(303)~~, audio ~~(305)~~ and text ~~(307)~~ sub-streams;

  an act of computing an importance value per segment for each segment from said combining act;

  an act of ranking the segments based on said computed importance value at said computing act; and

  an act of identifying key elements based on said ranked segments.